

WHAT IS CLAIMED:

1. In a system of the type having a host processor and a subsystem coupled to said host processor, a method for communicating a change in said subsystem status or in a component in or coupled to said subsystem without polling by said host processor on a periodic basis, said method comprising:
- 5 establishing a communication link between said host processor and said subsystem;
communicating a selected status read command by said host processor to said subsystem instructing said subsystem to self-monitor predetermined component status and to send component status upon said subsystem detecting a change in said status;
10 terminating said communications link; and
monitoring, by said subsystem, said predetermined component status and when any one of said component status changes by a predetermined amount: (i) reestablishing said communications link with said host processor, and (ii) communicating said changed status to said host processor.
- 15 2. The method in Claim 1, wherein said first processor comprises a host adapter, said subsystem comprises a SAF-TE enclosure, and said component comprises a SAF-TE Processor (SEP) device.
3. The method in Claim 2, wherein said status is selected from the group consisting of a device status, a component status, a slot status, and combinations thereof.
- 20 4. The method in Claim 1, wherein said subsystem comprises a second processor and said status is communicated between said first processor and said second processor.
5. The method in Claim 2, wherein said communication link comprises a Small Computer System Interface (SCSI) communication bus supporting SCSI commands and protocol.

6. A method for monitoring a status change in a SCSI Accessed Fault-Tolerant Enclosure (SAF-TE) target device, the method comprising the steps of:

issuing, by a host adapter coupled to said SAF-TE by a SCSI bus, a single command sequence which includes a request for a status report for said target device only when a predefined minimum change has occurred in the status of said target device;

logically disconnecting said SAF-TE controlling said target device from said bus after receipt of said command; and

logically reconnecting said SAF-TE to said SCSI bus only when said predefined minimum change has occurred and communicating a response including said changed status to said host adapter.

7. The method in Claim 6, wherein said target device comprises a SAF-TE slot and said status change comprises a change in status of a SAF-TE slot.

8. The method in Claim 6, wherein said target device comprises a SAF-TE component and said status change comprises a change in status of a SAF-TE component.

9. The method in Claim 6, wherein said target device comprises a SAF-TE component disk drive and said status change comprises a change in status of a SAF-TE disk drive.

10. The method in Claim 6, wherein said single command sequence comprises a single fixed sequence of commands that is issued to solicit a future change in status from a target device without periodic polling of said target device or of an enclosure containing said target device.

11. The method in Claim 6, wherein said command sequence includes a command sent by a requestor to retrieve a target device status when said target device has a status change, and said command allows disconnection from a communication link coupling said requestor to said target device after said command has been received and reconnection to said communication link after said status has changed so that said changed status may be communicated to said requestor.

12. The method in Claim 11, wherein said communication link comprises a computer bus.
13. The method in Claim 11, wherein said communication link comprises a SCSI bus.
14. The method in Claim 11, wherein said requestor includes a host adapter coupled to a host computer.
15. The method in Claim 6, wherein said response from a target device is generated only when a status value change of a predetermined amount occurs relative to a reference status value.
16. The method in Claim 15, wherein said predetermined amount is any amount of change.
17. The method in Claim 15, wherein said predetermined amount is a percentage change compared to a previous value.
18. The method in Claim 15, wherein said predetermined amount comprises a status value that exceeds a predetermined threshold value.
19. The method in Claim 15, wherein said predetermined amount is specified programmatically.
20. The method in Claim 6, wherein said status returned in response to said command send by said requestor to retrieve a target device status when said target device has a status change has the same status information format and field definition as for status returned in response to a conventional polled status command.
21. The method in Claim 20, wherein said polled status command is selected from the group consisting of a Write Device Slot Status command, a Read Device Slot Status command, and a read enclosure status command.

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23. The method in Claim 6, wherein said command sequence may be issued at any arbitrary time so that a response to said command is generated upon the detection of a change in status of the target device.

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26. The method in Claim 25, wherein when said timer response time expires, status being generated and communicated to a status requestor.

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30. The method in Claim 6, wherein said change status and polling commands co-exist on a single system.

32. A method for determining if a target device supports a change status command, said method comprising steps of:

- 10 selecting, by a host adapter, a particular selected target device;
sending, by said host adapter, an inquiry command to said selected target device;
sending, by said selected target device, the requested inquiry data to said host adapter
and receiving said inquiry data by said host adapter;
determining if a flag in said inquiry data is a first predetermined logic state; and
enabling said device for change status commands only if said flag has said first
15 predetermined logic state and enabling said device for polled status commands if said flag
does not have said first predetermined logic state.

33. The method in Claim 32, wherein said flag comprises a command queue flag of said inquiry data.

- 20 34. The method in Claim 32, wherein said polled status commands are selected from the group consisting of a Write Device Slot Status command, a Read Device Slot Status command, and Read Enclosure Status command.

35. The method in Claim 32, wherein said change status commands are selected from the group consisting of a Read Device Slot Changed Status command, a Read Enclosure Changed Status command, a Read Device Slot Changed Status with Timeout command, a Read Enclosure Changed Status with Timeout command, and combinations thereof.

37. A method for reading a changed status for a target device, said method comprising steps of:

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creating a tag for the command;
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sending a tag by said host/adaptor to said selected target device giving it disconnect privilege when a command is received;

15 waiting, by the host adapter, for the target device to disconnect, and once
disconnected continuing other activities scheduled for other devices;

20 monitoring, by said host adapter, for any target device request for reconnection;
if there has been no reportable change in status then the target device continues to
gather status and monitor status changes until the comparison indicates there has been a
reportable change in status;

reconnection of the target device with said host adapter;

retrieving said memory pointer associated with said received tag and storing the target
30 device status data into memory at that memory location.

39. The method in Claim 37, wherein said changed status is a device slot change status, an enclosure change status, an enclosure change status, a slot change status with timeout, and an enclosure change status with timeout.

- after receiving the command from the host adapter, determining whether the command specifies a timeout parameter;

- if a timeout parameter is specified, then performing, by the SEP, incrementing or decrementing a timer count and when the timer count value reaches a predetermined counter value, gathering the required status and reconnecting to the host adapter; and returning status and tag to the host adapter.